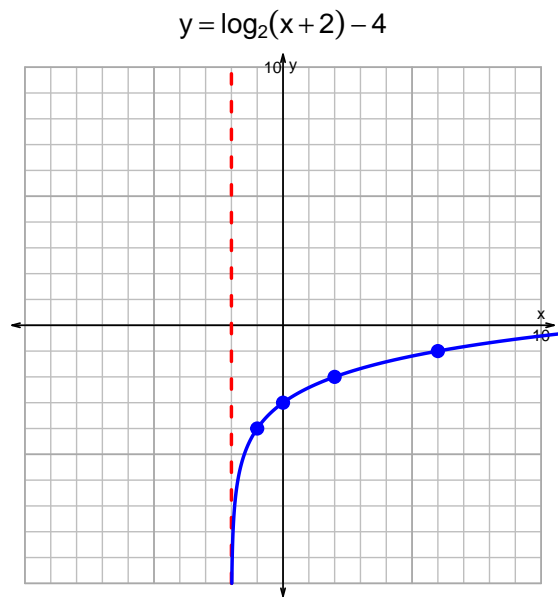
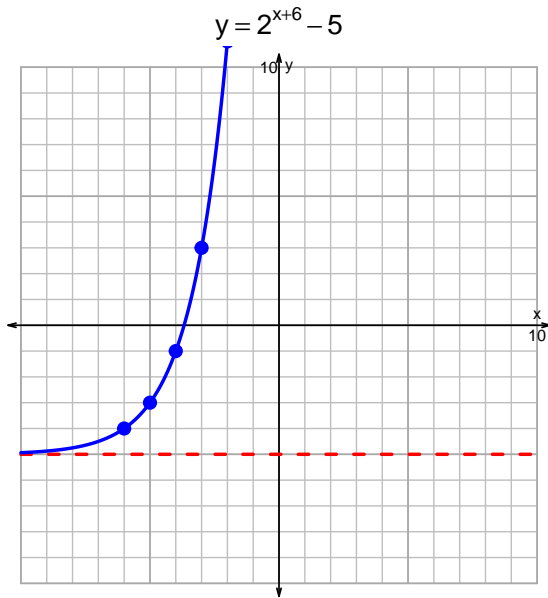


Date:

s18: EXP LOG (SLTN v349)

1. (10 pts) Graph $y = 2^{x+6} - 5$ and $y = \log_2(x+2) - 4$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$13 = \left(\frac{3}{5}\right) \cdot 2^{-4t/7}$$

Divide both sides by $\frac{3}{5}$.

$$\frac{13 \cdot 5}{3} = 2^{-4t/7}$$

Take log, base 2, of both sides.

$$\log_2 \left(\frac{13 \cdot 5}{3} \right) = \frac{-4t}{7}$$

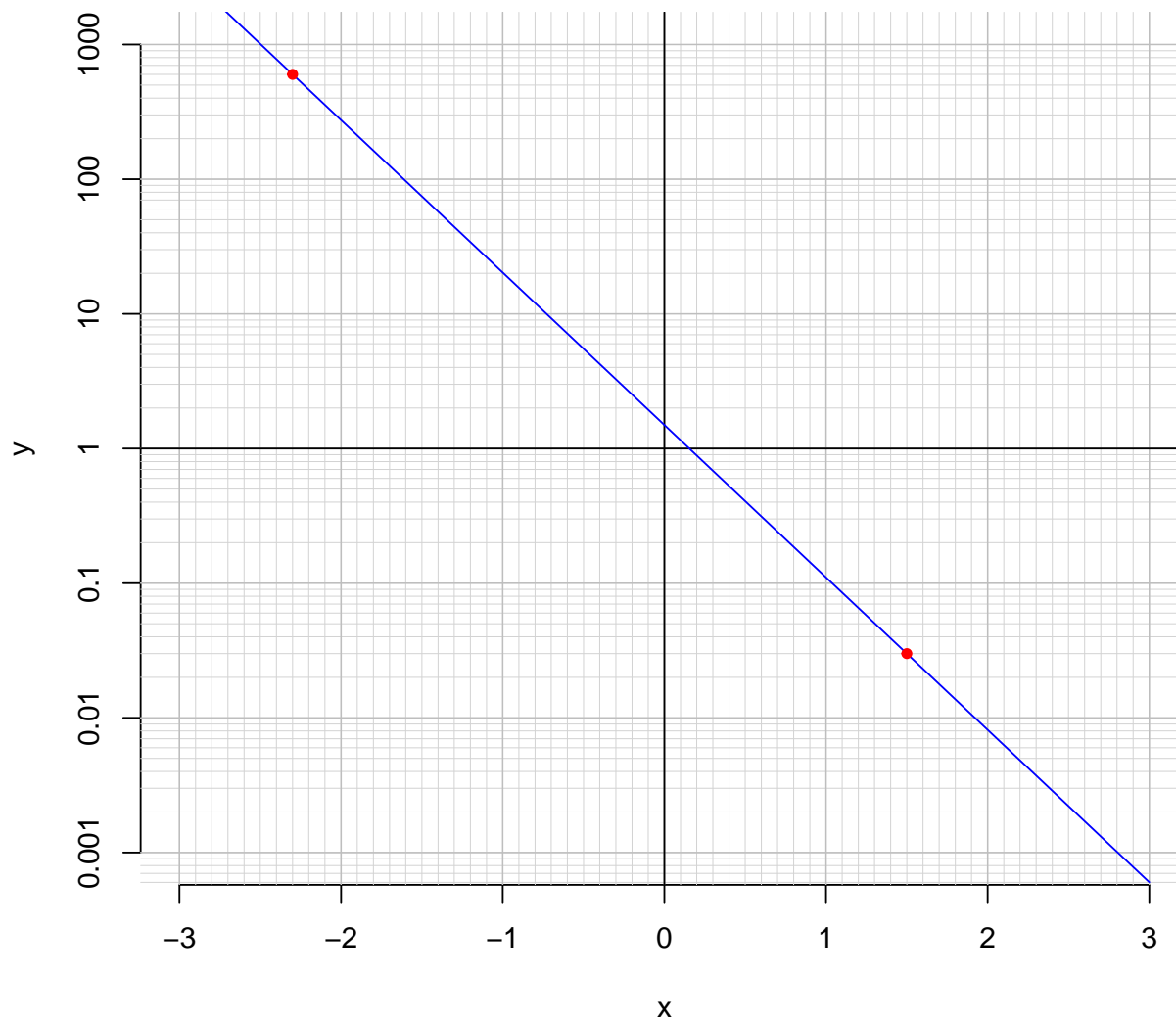
Divide both sides by $\frac{-4}{7}$.

$$\frac{-7}{4} \cdot \log_2 \left(\frac{13 \cdot 5}{3} \right) = t$$

Switch sides.

$$t = \frac{-7}{4} \cdot \log_2 \left(\frac{13 \cdot 5}{3} \right)$$

3. (10 pts) An exponential function $f(x) = 1.5 \cdot e^{-2.61x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-2.3)$.

$$f(-2.3) = 600$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{2.61} \cdot \ln\left(\frac{x}{1.5}\right)$$

Using the plot above, evaluate $f^{-1}(0.03)$.

$$f^{-1}(0.03) = 1.5$$